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Welfare and Environment in Rural Uganda

Facts and Figures

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Abstract

This study combines census, survey and bio-physical data to generate spatially disaggregated poverty/biomass information for rural Uganda. It makes a methodological contribution to small area welfare estimation by exploring how the inclusion of bio-physical information improves small area welfare estimates. By combining the generated poverty estimates with national bio-physical data, this study explores the contemporaneous correlation between poverty (welfare) and natural resource degradation at a level of geographic detail that has not been feasible previously. The resulting estimates of poverty measures were improved by the inclusion of bio-physical information and the poverty estimates appear to be more robust, as the standard errors show a decline of up to 40 percent in some cases. The coefficients of variation (i.e. the ratio of the standard error and the point estimate) decline in general as well. Overall, we conclude that the estimates of the poverty measures are more robust when bio-physical information is taken into account. One of the outputs of this study is a series of maps showing poverty and biomass overlays for Uganda. These maps can be used as a planning tool and for targeting purposes.

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Keywords: Geo-referenced information, land use, poverty, rural Uganda, small-area estimation, welfare measurement

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1. Introduction

This report presents additional results of the analysis in Okwi *et al.* (2005)¹. Section 2 presents the lists of variables used in the analysis of preparing poverty estimates. The small area estimation approach relies data at different aggregation level, such as household surveys and census data. Therefore, the mean values of variables of both data sources are compared on a statistical basis, i.e. the zero stage comparison between the means of variables from the Integrated Household Survey 1992 in Uganda, and the 1992 census. Section 3 presents the list of variables used in the comparison tests. Finally, Section 4 presents the poverty estimates at county and district level, which are visualised in the poverty maps in Appendix E in Okwi *et al.* (2005).

2. List of variables

Table 1 List of variables from the Integrated Household Survey (IHS, 1991) for which Census information is available.

Variables	Subcategories
<i>Total expenditures of the household</i>	
<i>Household composition</i>	
Household size	
Adult equivalents of household	
Relationship to head	Head of household Spouse Child
Sex	
Age	
Marital status	Divorced Separated Single Widowed Married
<i>Education</i>	
Level	P1-P4 P5-P7 None O'level and higher Below O'level Primary school Secondary school Number of years
School attendance	
Literacy	
Education deficit	

¹ Okwi, P.O., Hoogeveen, J.G., Emwanu, T., Linderhof, V.G.M. & Begumana, J. (2005). *Welfare and Environment in Rural Uganda. Results from a Small-Area Estimation Approach*. PREM Report 2005-04. Institute for Environmental Studies, Vrije Universiteit, Amsterdam, 43 pp.

Variables	Subcategories
<i>Occupation</i>	
Main occupation of household head	Disabled Employed Household work Clerical worker Too old Other Self employed Student Unpaid family worker
<i>Industry of main occupation</i>	
<i>Housing</i>	
Type of housing unit	Housing type detached Housing type hut Housing type servant's quarters Housing type other
Number of rooms	
Livelihood subsistence farming	
Type of tenure of dwelling unit	Tenure own Tenure free Tenure other
Type of wall material	Wall burnt bricks Wall cement Wall mud Wall stone Wall unburnt bricks Wall wood Wall other
Roofing material	Roof asbestos Roof cement Roof other Roof thatched Roof tiles
Floor material	Floor burnt bricks Floor cement Mud floor Floor stone Floor wood Floor other
Type of kitchen	Kitchen inside and exclusive Kitchen outside and exclusive Kitchen shared Kitchen none
Type of fuel for cooking	Cooking with charcoal Cooking with electricity Cooking with gas Cooking with paraffin Cooking with wood Cooking with other fuel

Variables	Subcategories
Type of toilet	Toilet flush Toilet pit Toilet none Toilet other
Presence of bath	
Water availability	Water tap Water other
Water quality	Water safe Water unsafe
Type of fuel for lighting	Lighting electricity Lighting paraffin Lighting other

Table 2 Land use covers in Uganda, 1991.

Land use	Area in hectares	Proportion
Plantations Hardwoods – deciduous trees/broadleaves (hardwood)	18,682	0.1%
Plantations Softwoods- coniferous trees	16,384	0.1%
Tropical high forest (THF)- Normally stocked	650,150	2.7%
Tropical high forest (THF) – Degraded/depleted	274,058	1.1%
Woodlands – trees and shrubs (average height > 4m)	3,974,102	16.5%
Bush lands - bush, thickets, scrub (average height < 4m)	1,422,395	5.9%
Grasslands –rangelands, pastureland, open savannah including scattered shrubs and thickets	5,115,266	21.2%
Wetlands – wetland vegetation; swamp areas, papyrus and other sedges	484,037	2.0%
Subsistence Farmlands –mixed farmland, smallholdings in use or recently used, with or without trees	8,400,999	34.8%
Commercial Farmlands – mono cropped, non seasonal farmland usually without any trees for example tea and sugar estates	68,446	0.3%
Built up areas – urban or rural build up areas	36,571	0.2%
Water – Lakes, rivers and ponds	3,690,254	15.3%
Impediments – bare rocks and soils	3,713	0.0%
Total	24,155,058	100.0%

Source: Forest Department (2002). *National Biomass Study: final report*. Kampala: Forest Department.

Table 3 Distances to different kind of roads, 1991.

Stratum
Proportion of a stratum within 5 km distance from a main road
Proportion of a stratum within 4 km distance from a main road
Proportion of a stratum within 3 km distance from a main road
Proportion of a stratum within 2 km distance from a main road
Proportion of a stratum within 1 km distance from a main road

Stratum
Proportion of a stratum within 5 km distance from a tarmac road
Proportion of a stratum within 4 km distance from a tarmac road
Proportion of a stratum within 3 km distance from a tarmac road
Proportion of a stratum within 2 km distance from a tarmac road
Proportion of a stratum within 1 km distance from a tarmac road
Proportion of a stratum within 5 km distance from a track
Proportion of a stratum within 4 km distance from a track
Proportion of a stratum within 3 km distance from a track
Proportion of a stratum within 2 km distance from a track
Proportion of a stratum within 1 km distance from a track

Source: Forest Department (2002). *National Biomass Study: final report*. Kampala: Forest Department.

3. Survey and Census comparison

The variables in the household survey and the Census are first compared on definition and categorisation. If a variable of the household survey and the Census match on the basis of definition, the next step is to test whether the household survey means and the Census mean differ significantly. The test is set up as follows. Based on the Census (CM), a 95% confidence interval is calculated with a lower bound (L95) and an upper bound (U95). If the Survey mean is within this confidence interval, the variable is 'accepted', which means that the variable will be included in the first-stage regression of household expenditures.

Summary of the symbols in the tables of this section:

CM: Census mean.

SM: Survey mean.

L95: Lower bound 95%.

U95: Upper bound 95%.

A: A = 1 if the Survey mean of a variable lies within the 95% confidence interval of the Census mean. Then, the variable is accepted to be included in the first-stage regression, otherwise it is rejected.

Table 4 Zero stage comparison between census means and household survey means.

Variable	Central rural					East rural					North rural					West rural				
	CM	SM	L95	U95	A	CM	SM	L95	U95	A	CM	SM	L95	U95	A	CM	SM	L95	U95	A
Adult equivalent size of household	3.48	3.43	3.28	3.59	1	3.89	3.85	3.68	4.02	1	4.00	3.94	3.75	4.14	1	4.07	4.05	3.88	4.21	1
Natural logarithm of adult equivalent size	1.03	1.02	0.97	1.06	1	1.16	1.15	1.11	1.19	1	1.22	1.21	1.17	1.26	1	1.24	1.23	1.20	1.27	1
Household size	4.41	4.40	4.20	4.61	1	4.89	4.88	4.66	5.10	1	5.01	4.99	4.75	5.23	1	5.17	5.17	4.96	5.38	1
Household size squared	29.53	29.00	26.28	31.72	1	34.98	34.84	30.49	39.18	1	34.39	33.18	29.87	36.48	1	35.66	35.32	32.07	38.58	1
Natural logarithm of household size	1.22	1.22	1.17	1.27	1	1.36	1.36	1.31	1.40	1	1.43	1.43	1.38	1.48	1	1.46	1.46	1.42	1.50	1
Household size = 1	0.18	0.18	0.16	0.21	1	0.12	0.12	0.10	0.14	1	0.08	0.08	0.06	0.09	1	0.08	0.08	0.06	0.10	1
Household size = 10	0.02	0.02	0.02	0.03	1	0.03	0.03	0.02	0.04	1	0.03	0.03	0.01	0.04	1	0.03	0.03	0.02	0.05	1
Household size = 11	0.01	0.01	0.01	0.02	1	0.01	0.01	0.01	0.02	1	0.01	0.01	0.00	0.02	1	0.02	0.02	0.01	0.02	1
Household size = 12	0.01	0.01	0.00	0.01	1	0.01	0.01	0.01	0.02	1	0.01	0.01	0.00	0.01	1	0.01	0.01	0.00	0.02	1
Household size = 13	0.02	0.02	0.01	0.03	1	0.03	0.03	0.02	0.04	1	0.02	0.02	0.01	0.03	1	0.02	0.02	0.00	0.03	1
Household size = 2	0.14	0.14	0.12	0.16	1	0.13	0.13	0.12	0.15	1	0.12	0.12	0.10	0.14	1	0.11	0.11	0.09	0.12	1
Household size = 3	0.14	0.14	0.12	0.16	1	0.14	0.14	0.12	0.16	1	0.14	0.14	0.12	0.16	1	0.14	0.14	0.12	0.15	1
Household size = 4	0.13	0.13	0.11	0.14	1	0.14	0.14	0.12	0.15	1	0.15	0.15	0.13	0.17	1	0.14	0.14	0.12	0.16	1
Household size = 5	0.11	0.11	0.09	0.12	1	0.12	0.12	0.10	0.14	1	0.14	0.14	0.12	0.16	1	0.13	0.13	0.11	0.15	1
Household size = 6	0.09	0.09	0.07	0.10	1	0.10	0.10	0.09	0.11	1	0.12	0.12	0.10	0.13	1	0.12	0.12	0.10	0.13	1
Household size = 7	0.07	0.07	0.05	0.08	1	0.08	0.08	0.06	0.09	1	0.09	0.09	0.07	0.10	1	0.09	0.09	0.08	0.11	1
Household size = 8	0.05	0.05	0.03	0.06	1	0.05	0.05	0.04	0.07	1	0.06	0.06	0.04	0.08	1	0.07	0.07	0.06	0.08	1
Household size = 9	0.03	0.03	0.02	0.04	1	0.04	0.04	0.03	0.05	1	0.04	0.04	0.03	0.05	1	0.05	0.05	0.04	0.06	1
Age of household head	42.76	42.76	41.60	43.92	1	42.79	42.80	41.93	43.66	1	41.36	41.72	40.70	42.74	1	41.80	41.98	41.10	42.86	1
Age of household head squared	2137	2122	2009	2235	1	2109	2095	2009	2181	1	1952	1968	1869	2068	1	2026	2031	1942	2120	1
Natural logarithm of age of household head	3.67	3.68	3.65	3.70	1	3.68	3.68	3.66	3.70	1	3.65	3.67	3.64	3.69	1	3.66	3.66	3.64	3.68	1
Number of females aged 10 or younger	0.84	0.85	0.78	0.91	1	0.90	0.95	0.88	1.02	1	0.93	0.98	0.91	1.06	1	1.02	1.00	0.93	1.06	1
Number of females aged 15 or younger	1.12	1.11	1.02	1.19	1	1.17	1.23	1.14	1.31	1	1.23	1.26	1.17	1.35	1	1.34	1.31	1.23	1.40	1
Number of females aged 20 or younger	1.35	1.33	1.24	1.42	1	1.45	1.51	1.41	1.61	1	1.53	1.50	1.40	1.60	1	1.66	1.62	1.53	1.72	1
Number of females aged 25 or younger	1.52	1.49	1.39	1.58	1	1.66	1.72	1.61	1.83	1	1.75	1.71	1.61	1.81	1	1.87	1.82	1.73	1.92	1
Number of females aged 30 or younger	1.69	1.64	1.54	1.74	1	1.87	1.90	1.79	2.01	1	1.98	1.92	1.81	2.03	1	2.08	2.02	1.92	2.13	1
Number of females aged 30 or older	0.56	0.58	0.53	0.62	1	0.68	0.65	0.61	0.69	1	0.68	0.66	0.61	0.71	1	0.64	0.64	0.60	0.68	1
Number of females aged 35 or older	0.44	0.47	0.42	0.51	1	0.54	0.53	0.50	0.57	1	0.53	0.54	0.49	0.59	1	0.50	0.49	0.45	0.52	1
Number of females aged 40 or older	0.36	0.37	0.33	0.41	1	0.44	0.43	0.40	0.46	1	0.40	0.43	0.38	0.47	1	0.39	0.37	0.34	0.40	1
Number of females aged 45 or older	0.28	0.30	0.27	0.34	1	0.35	0.35	0.32	0.38	1	0.31	0.34	0.30	0.37	1	0.30	0.29	0.26	0.32	1

Source: Authors computations.

Table 4 Zero stage comparison between census means and household survey means (continued).

Variable	Central rural					East rural					North rural					West rural				
	CM	SM	L95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A
Number of females aged 0-5	0.50	0.50	0.46	0.54	1	0.55	0.57	0.53	0.62	1	0.54	0.54	0.50	0.59	1	0.61	0.62	0.57	0.67	1
Number of females aged 6-14	0.57	0.57	0.51	0.62	1	0.57	0.61	0.56	0.66	1	0.63	0.67	0.60	0.73	1	0.67	0.64	0.59	0.70	1
Number of males aged 20 or younger	1.38	1.41	1.30	1.52	1	1.45	1.46	1.36	1.56	1	1.51	1.60	1.49	1.72	1	1.62	1.64	1.54	1.73	1
Number of males aged 25 or younger	1.54	1.57	1.46	1.68	1	1.64	1.64	1.54	1.74	1	1.70	1.77	1.65	1.90	1	1.80	1.82	1.72	1.92	1
Number of males aged 30 or younger	1.69	1.70	1.60	1.81	1	1.81	1.80	1.70	1.91	1	1.88	1.93	1.80	2.06	1	1.98	1.99	1.89	2.10	1
Number of males aged 30 or older	0.58	0.55	0.51	0.58	1	0.64	0.62	0.59	0.65	1	0.58	0.55	0.51	0.59	1	0.60	0.62	0.59	0.65	1
Number of males aged 40 or older	0.38	0.36	0.33	0.38	1	0.42	0.40	0.38	0.43	1	0.34	0.32	0.29	0.35	1	0.36	0.38	0.35	0.41	1
Number of males aged 45 or older	0.31	0.29	0.27	0.32	1	0.34	0.33	0.31	0.36	1	0.27	0.25	0.22	0.28	1	0.29	0.31	0.28	0.34	1
Number of males aged 50 or older	0.25	0.24	0.22	0.27	1	0.27	0.26	0.24	0.28	1	0.20	0.19	0.16	0.21	1	0.22	0.24	0.22	0.27	1
Number of males aged 0-5	0.50	0.54	0.49	0.58	1	0.55	0.53	0.49	0.58	1	0.54	0.56	0.52	0.61	1	0.61	0.62	0.58	0.67	1
Number of males aged 6-14	0.60	0.62	0.55	0.68	1	0.60	0.64	0.58	0.70	1	0.65	0.71	0.65	0.78	1	0.68	0.72	0.66	0.78	1
Number of males aged 15-29	0.54	0.52	0.48	0.56	1	0.62	0.58	0.54	0.63	1	0.64	0.61	0.54	0.69	1	0.64	0.60	0.55	0.65	1
Number of males aged 30-49	0.33	0.30	0.28	0.33	1	0.37	0.36	0.33	0.38	1	0.38	0.36	0.33	0.40	1	0.37	0.38	0.36	0.41	1
Number of persons aged 15 or younger	2.27	2.32	2.15	2.48	1	2.37	2.45	2.30	2.60	1	2.49	2.61	2.46	2.77	1	2.69	2.72	2.57	2.86	1
Number of persons aged 20 or younger	2.73	2.74	2.56	2.91	1	2.91	2.97	2.79	3.15	1	3.04	3.11	2.93	3.29	1	3.27	3.26	3.09	3.43	1
Number of persons aged 25 or younger	3.06	3.06	2.88	3.23	1	3.30	3.36	3.17	3.55	1	3.45	3.49	3.30	3.67	1	3.67	3.64	3.47	3.82	1
Number of persons aged 30 or younger	3.38	3.34	3.16	3.52	1	3.68	3.70	3.50	3.90	1	3.86	3.85	3.65	4.05	1	4.06	4.01	3.83	4.19	1
Number of persons aged 30 or older	1.14	1.12	1.06	1.18	1	1.32	1.27	1.21	1.33	1	1.25	1.21	1.15	1.28	1	1.24	1.26	1.20	1.32	1
Number of persons aged 35 or older	0.90	0.91	0.86	0.97	1	1.06	1.02	0.97	1.07	1	0.97	0.95	0.89	1.02	1	0.96	0.96	0.91	1.02	1
Number of persons aged 40 or older	0.73	0.73	0.67	0.78	1	0.86	0.84	0.79	0.89	1	0.74	0.74	0.69	0.80	1	0.76	0.75	0.71	0.80	1
Number of persons aged 45 or older	0.59	0.59	0.54	0.65	1	0.69	0.68	0.64	0.73	1	0.58	0.59	0.54	0.64	1	0.59	0.60	0.55	0.64	1
Number of persons aged 50 or older	0.47	0.48	0.44	0.53	1	0.54	0.54	0.50	0.58	1	0.42	0.44	0.39	0.48	1	0.46	0.45	0.41	0.48	1
Number of persons aged 55 or older	0.34	0.36	0.32	0.40	1	0.39	0.40	0.36	0.44	1	0.30	0.31	0.27	0.35	1	0.33	0.33	0.30	0.36	1
Number of persons aged 60 or older	0.27	0.28	0.25	0.32	1	0.30	0.29	0.26	0.33	1	0.21	0.20	0.17	0.23	1	0.26	0.26	0.23	0.28	1
Number of persons aged 0-5	1.00	1.04	0.97	1.10	1	1.09	1.11	1.04	1.18	1	1.08	1.11	1.04	1.17	1	1.22	1.24	1.18	1.31	1
Number of persons aged 6-14	1.16	1.19	1.08	1.29	1	1.17	1.25	1.16	1.34	1	1.29	1.38	1.26	1.49	1	1.35	1.36	1.27	1.45	1
Proportion of females aged 0-5	0.09	0.09	0.08	0.10	1	0.09	0.10	0.09	0.10	1	0.10	0.10	0.09	0.10	1	0.11	0.11	0.10	0.11	1
Proportion of females aged 0-5 squared	0.03	0.03	0.02	0.03	1	0.03	0.03	0.03	0.03	1	0.03	0.03	0.02	0.03	1	0.03	0.03	0.03	0.03	1
Proportion of females aged 6-14	0.09	0.09	0.08	0.10	1	0.09	0.09	0.09	0.10	1	0.11	0.11	0.10	0.12	1	0.10	0.10	0.09	0.10	1
Proportion of females aged 6-14 squared	0.03	0.03	0.03	0.03	1	0.03	0.03	0.02	0.03	1	0.03	0.03	0.03	0.04	1	0.03	0.03	0.02	0.03	1

Source: Authors computations.

Table 4 Zero stage comparison between census means and household survey means (continued).

Variable	Central rural					East rural					North rural					West rural				
	CM	SM	L95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A
Proportion of females aged 15-29	0.13	0.12	0.11	0.13	1	0.14	0.14	0.13	0.15	1	0.16	0.15	0.14	0.16	1	0.15	0.15	0.14	0.16	1
Proportion of females aged 30-49 squared	0.03	0.03	0.02	0.04	1	0.03	0.03	0.02	0.03	1	0.03	0.03	0.02	0.03	1	0.02	0.02	0.02	0.03	1
Proportion of males aged 0-5	0.09	0.09	0.09	0.10	1	0.09	0.09	0.08	0.10	1	0.10	0.10	0.09	0.11	1	0.11	0.11	0.10	0.12	1
Proportion of males aged 0-5 squared	0.03	0.03	0.03	0.03	1	0.03	0.03	0.02	0.03	1	0.03	0.03	0.03	0.03	1	0.03	0.03	0.03	0.04	1
Proportion of males aged 6-14	0.10	0.10	0.09	0.11	1	0.09	0.10	0.09	0.10	1	0.11	0.11	0.10	0.12	1	0.11	0.11	0.10	0.11	1
Proportion of males aged 6-14 squared	0.03	0.03	0.03	0.04	1	0.03	0.03	0.03	0.03	1	0.03	0.04	0.03	0.04	1	0.03	0.03	0.03	0.04	1
Proportion of males older than 50	0.09	0.10	0.08	0.11	1	0.09	0.08	0.07	0.09	1	0.05	0.06	0.05	0.07	1	0.06	0.06	0.06	0.07	1
Proportion of males older than 50 squared	0.06	0.07	0.05	0.08	1	0.05	0.04	0.04	0.05	1	0.03	0.03	0.02	0.04	1	0.03	0.03	0.02	0.04	1
Head male and divorced	0.15	0.14	0.12	0.16	1	0.07	0.06	0.05	0.08	1	0.05	0.05	0.03	0.06	1	0.06	0.05	0.04	0.07	1
Head attained education below O' level	0.08	0.07	0.05	0.08	1	0.07	0.07	0.06	0.09	1	0.06	0.07	0.05	0.09	1	0.04	0.05	0.04	0.06	1
Mean number of years of education of adults	2.25	2.24	2.06	2.43	1	1.87	2.00	1.83	2.16	1	1.58	1.60	1.46	1.73	1	1.59	1.70	1.57	1.83	1
<i>Idem</i> squared	11.63	11.71	9.71	13.70	1	8.48	9.81	8.06	11.56	1	6.32	6.16	4.98	7.34	1	6.63	7.32	6.08	8.55	1
Highest number of years of education in hh	5.81	5.70	5.40	6.01	1	5.70	5.87	5.56	6.18	1	5.12	5.41	5.05	5.77	1	5.26	5.34	5.06	5.63	1
Nr. of males with at least secondary school	0.30	0.29	0.24	0.33	1	0.29	0.31	0.26	0.35	1	0.20	0.23	0.18	0.29	1	0.23	0.23	0.19	0.27	1
Nr. of males with education below O' level	0.19	0.18	0.15	0.21	1	0.18	0.18	0.15	0.21	1	0.12	0.13	0.10	0.17	1	0.13	0.13	0.11	0.16	1
Nr. of males with educ. at O' level or higher	0.11	0.11	0.08	0.13	1	0.11	0.13	0.10	0.16	1	0.08	0.10	0.07	0.13	1	0.10	0.10	0.08	0.11	1
Prop. of males with primary school squared	0.34	0.32	0.30	0.34	1	0.24	0.25	0.23	0.26	1	0.21	0.20	0.19	0.22	1	0.24	0.23	0.22	0.25	1
Prop. of males with at least secondary school	0.07	0.07	0.06	0.08	1	0.06	0.07	0.06	0.08	1	0.04	0.05	0.04	0.06	1	0.05	0.05	0.04	0.06	1
<i>Idem</i> squared	0.04	0.04	0.03	0.05	1	0.03	0.03	0.02	0.04	1	0.02	0.02	0.01	0.02	1	0.02	0.02	0.02	0.03	1
Prop. of males with education below O' level	0.04	0.04	0.03	0.05	1	0.04	0.04	0.03	0.04	1	0.03	0.02	0.02	0.03	1	0.02	0.03	0.02	0.03	1
<i>Idem</i> squared	0.02	0.02	0.01	0.03	1	0.02	0.02	0.01	0.02	1	0.01	0.01	0.00	0.01	1	0.01	0.01	0.01	0.01	1
Prop. of males with educ. at O' level or higher	0.03	0.03	0.02	0.03	1	0.02	0.03	0.02	0.04	1	0.02	0.02	0.02	0.03	1	0.02	0.02	0.02	0.03	1
<i>Idem</i> squared	0.02	0.02	0.01	0.02	1	0.01	0.02	0.01	0.02	1	0.01	0.01	0.00	0.01	1	0.01	0.01	0.01	0.02	1
Mean education deficit of children aged 7-13	1.17	1.17	1.08	1.26	1	1.12	1.20	1.12	1.27	1	1.39	1.41	1.30	1.52	1	1.34	1.28	1.19	1.36	1
Max. education deficit of children aged 7-13	3.99	4.06	3.76	4.36	1	4.19	4.29	4.03	4.54	1	5.14	5.13	4.72	5.54	1	4.92	4.70	4.42	4.98	1
<i>Idem</i> squared	35.91	37.44	34.56	40.31	1	38.09	39.40	36.76	42.04	1	49.82	49.68	45.34	54.03	1	46.48	45.61	42.68	48.54	1
Prop. of education deficit of children 7-13	3.72	3.80	3.52	4.08	1	3.92	3.99	3.76	4.23	1	4.80	4.75	4.38	5.12	1	4.57	4.35	4.08	4.61	1
Number of persons aged 15-29	1.11	1.06	0.99	1.12	1	1.30	1.25	1.17	1.33	1	1.39	1.29	1.20	1.39	0	1.36	1.30	1.23	1.37	1
Number of females aged 10 or younger	1.69	1.77	1.65	1.88	1	1.80	1.88	1.77	1.99	1	1.86	2.00	1.88	2.11	0	2.03	2.06	1.95	2.17	1
Number of females aged 50 or older	0.23	0.24	0.21	0.27	1	0.27	0.28	0.25	0.31	1	0.22	0.25	0.22	0.28	1	0.24	0.21	0.18	0.23	0

Source: Authors computations.

Table 4 Zero stage comparison between census means and household survey means (continued).

Variable	Central rural					East rural					North rural					West rural				
	CM	SM	L95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A
Number of females aged 55 or older	0.16	0.18	0.15	0.20	1	0.19	0.20	0.18	0.22	1	0.16	0.17	0.15	0.20	1	0.17	0.14	0.12	0.16	0
Number of females aged 60 or older	0.13	0.14	0.12	0.16	1	0.14	0.15	0.12	0.17	1	0.11	0.11	0.09	0.13	1	0.13	0.11	0.09	0.13	0
Number of females aged 15-29	0.57	0.54	0.50	0.58	1	0.69	0.67	0.62	0.72	1	0.74	0.68	0.64	0.72	0	0.72	0.70	0.66	0.74	1
Number of males aged 15 or younger	1.15	1.21	1.11	1.31	1	1.20	1.22	1.14	1.31	1	1.25	1.35	1.25	1.45	0	1.35	1.40	1.31	1.49	1
Number of males aged 35 or older	0.46	0.45	0.42	0.48	1	0.52	0.48	0.46	0.51	0	0.45	0.41	0.38	0.45	1	0.46	0.48	0.45	0.51	1
Number of males aged 55 or older	0.18	0.19	0.16	0.21	1	0.20	0.20	0.18	0.22	1	0.15	0.14	0.11	0.16	1	0.16	0.19	0.17	0.21	0
Number of males aged 60 or older	0.14	0.15	0.12	0.17	1	0.15	0.15	0.13	0.17	1	0.10	0.09	0.07	0.11	1	0.12	0.15	0.13	0.16	0
Proportion of females aged 15-29 squared	0.05	0.04	0.04	0.05	1	0.05	0.04	0.04	0.05	1	0.05	0.05	0.05	0.06	1	0.05	0.05	0.04	0.05	0
Proportion of females aged 30-49	0.08	0.08	0.07	0.09	1	0.08	0.08	0.07	0.09	1	0.10	0.09	0.08	0.10	0	0.08	0.08	0.07	0.09	1
Proportion of males aged 15-29	0.16	0.15	0.14	0.17	1	0.14	0.13	0.12	0.14	1	0.14	0.12	0.11	0.13	0	0.14	0.14	0.13	0.15	1
Proportion of males aged 15-29 squared	0.09	0.09	0.08	0.10	1	0.06	0.06	0.05	0.07	1	0.05	0.04	0.04	0.05	0	0.06	0.06	0.05	0.07	1
Proportion of males aged 30-49	0.11	0.10	0.08	0.11	1	0.10	0.09	0.08	0.10	1	0.09	0.08	0.07	0.08	0	0.09	0.09	0.08	0.10	1
Proportion of males aged 30-49 squared	0.07	0.06	0.05	0.07	1	0.05	0.04	0.03	0.05	1	0.03	0.02	0.02	0.03	0	0.04	0.04	0.03	0.04	1
Head male and widowed	0.12	0.12	0.10	0.14	1	0.10	0.12	0.10	0.13	1	0.11	0.16	0.13	0.18	0	0.11	0.11	0.10	0.13	1
Female household head	0.30	0.29	0.25	0.32	1	0.23	0.22	0.19	0.24	1	0.31	0.30	0.27	0.33	1	0.28	0.22	0.19	0.24	0
Head female and divorced or widowed	0.17	0.17	0.15	0.19	1	0.11	0.12	0.11	0.14	1	0.12	0.17	0.15	0.20	0	0.12	0.12	0.10	0.14	1
Head attained education at level P5-P7	0.30	0.27	0.25	0.30	0	0.28	0.27	0.25	0.29	1	0.28	0.28	0.25	0.31	1	0.24	0.24	0.22	0.26	1
Number of spouses without education	0.18	0.16	0.13	0.19	1	0.39	0.35	0.32	0.38	0	0.42	0.43	0.39	0.47	1	0.35	0.39	0.35	0.43	1
Number of spouses with at least secondary	0.04	0.05	0.04	0.06	1	0.03	0.04	0.03	0.05	1	0.01	0.01	0.01	0.02	1	0.02	0.03	0.02	0.03	0
Nr. of spouses with education below O' level	0.03	0.04	0.03	0.05	0	0.02	0.02	0.02	0.03	1	0.01	0.01	0.00	0.01	1	0.01	0.01	0.01	0.02	1
Nr. of spouses with educ. at O' level or higher	0.01	0.01	0.01	0.02	1	0.01	0.01	0.01	0.02	1	0.00	0.01	0.00	0.01	1	0.01	0.01	0.01	0.02	0
Number of males without education	2.03	2.12	1.99	2.24	1	2.67	2.51	2.38	2.64	0	2.99	2.91	2.75	3.07	1	2.86	2.87	2.72	3.02	1
Number of males with primary school	2.09	2.00	1.88	2.11	1	1.93	2.06	1.94	2.18	0	1.82	1.84	1.72	1.97	1	2.08	2.07	1.95	2.18	1
Number of males with education level P1-P4	1.24	1.25	1.16	1.35	1	1.08	1.23	1.15	1.30	0	1.08	1.13	1.03	1.22	1	1.32	1.31	1.23	1.39	1
Number of males with education level P5-P7	0.85	0.75	0.69	0.80	0	0.86	0.83	0.77	0.90	1	0.74	0.72	0.66	0.78	1	0.76	0.76	0.70	0.82	1
Proportion of spouses without education	0.17	0.15	0.13	0.18	1	0.35	0.33	0.30	0.36	1	0.40	0.40	0.36	0.43	1	0.34	0.38	0.34	0.41	0
Prop. of spouses with secondary school	0.04	0.05	0.04	0.06	1	0.03	0.03	0.02	0.04	1	0.01	0.01	0.01	0.02	1	0.02	0.03	0.02	0.03	0
Prop. of spouses with educ. below O' level	0.03	0.04	0.03	0.05	0	0.02	0.02	0.01	0.03	1	0.01	0.01	0.00	0.01	1	0.01	0.01	0.01	0.02	1
Prop. of spouses with at least O' level educ.	0.01	0.01	0.01	0.02	1	0.01	0.01	0.01	0.02	1	0.00	0.00	0.00	0.01	1	0.01	0.01	0.01	0.02	0
Proportion of males without education	0.45	0.46	0.44	0.48	1	0.56	0.53	0.51	0.55	0	0.60	0.60	0.57	0.62	1	0.56	0.56	0.54	0.58	1

Source: Authors computations.

Table 4 Zero stage comparison between census means and household survey means (continued).

Variable	Central rural					East rural					North rural					West rural				
	CM	SM	L95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A
Prop. of males without education squared	0.32	0.32	0.30	0.34	1	0.41	0.38	0.36	0.40	0	0.45	0.44	0.41	0.47	1	0.40	0.40	0.38	0.42	1
Prop. of males with primary school education	0.48	0.47	0.45	0.49	1	0.38	0.40	0.39	0.42	0	0.36	0.36	0.34	0.38	1	0.40	0.39	0.37	0.41	1
Prop. of males with education at level P1-P4	0.27	0.29	0.27	0.30	1	0.21	0.23	0.22	0.25	0	0.20	0.21	0.19	0.22	1	0.24	0.24	0.23	0.25	1
<i>Idem</i> squared	0.16	0.17	0.15	0.18	1	0.10	0.12	0.11	0.13	0	0.09	0.09	0.08	0.10	1	0.12	0.12	0.10	0.13	1
Prop. of males with education at level P5-P7	0.21	0.18	0.17	0.20	0	0.18	0.17	0.16	0.18	1	0.16	0.15	0.13	0.16	1	0.15	0.15	0.14	0.16	1
<i>Idem</i> squared	0.12	0.10	0.09	0.11	0	0.09	0.08	0.07	0.09	1	0.07	0.06	0.05	0.07	1	0.07	0.06	0.06	0.07	1
Mean educ. deficit of children 7-13 squared	3.65	3.64	3.29	3.98	1	3.25	3.58	3.28	3.89	0	4.33	4.36	3.93	4.80	1	4.06	3.91	3.57	4.25	1
Mean education deficit of children aged 7-18	2.30	2.18	2.03	2.33	1	2.28	2.28	2.15	2.42	1	2.73	2.65	2.46	2.83	1	2.66	2.46	2.33	2.59	0
<i>Idem</i> squared	11.97	10.90	9.67	12.14	1	11.09	10.94	9.95	11.93	1	14.08	13.93	12.43	15.43	1	13.80	12.37	11.31	13.43	0
Max. education deficit of children aged 7-18	6.14	5.97	5.63	6.31	1	6.64	6.49	6.15	6.83	1	7.77	7.35	6.89	7.80	1	7.47	6.97	6.63	7.31	0
Number of persons aged 10 and above	2.88	2.76	2.63	2.88	0	3.23	3.14	3.00	3.28	1	3.31	3.13	2.96	3.30	0	3.32	3.25	3.11	3.39	1
Number of persons aged 30-49	0.66	0.64	0.60	0.68	1	0.78	0.73	0.68	0.77	0	0.83	0.77	0.72	0.83	0	0.78	0.81	0.77	0.85	1
Number of females aged 30-49	0.33	0.33	0.30	0.36	1	0.41	0.37	0.34	0.41	0	0.45	0.41	0.38	0.45	0	0.41	0.43	0.40	0.46	1
Number of males aged 10 or younger	0.85	0.92	0.85	0.99	0	0.90	0.93	0.86	1.00	1	0.93	1.01	0.94	1.08	0	1.01	1.06	0.99	1.13	1
Proportion of females aged older than 50	0.07	0.08	0.07	0.09	1	0.08	0.10	0.09	0.11	0	0.07	0.09	0.08	0.11	0	0.06	0.06	0.05	0.07	1
<i>Idem</i> squared	0.04	0.04	0.04	0.05	1	0.05	0.06	0.05	0.07	0	0.04	0.06	0.04	0.07	0	0.03	0.03	0.02	0.04	1
Head male and married	0.60	0.57	0.54	0.60	0	0.77	0.75	0.73	0.77	1	0.81	0.75	0.72	0.78	0	0.77	0.76	0.73	0.78	1
Head male and never married	0.13	0.17	0.15	0.20	0	0.05	0.07	0.06	0.09	0	0.03	0.04	0.03	0.05	1	0.07	0.08	0.06	0.10	1
Head with primary school level	0.55	0.58	0.55	0.60	0	0.47	0.50	0.47	0.53	0	0.46	0.48	0.44	0.52	1	0.48	0.51	0.48	0.53	1
Max. educ. deficit of children 7-18 squared	69.78	67.23	62.70	71.77	1	78.43	75.56	70.75	80.37	1	96.37	89.09	82.37	95.81	0	90.62	85.00	79.98	90.03	0
Prop. of education deficit of children 7-18	5.45	5.37	5.06	5.67	1	5.88	5.76	5.46	6.06	1	6.87	6.48	6.10	6.85	0	6.54	6.12	5.83	6.42	0
Number of spouses	0.49	0.52	0.49	0.55	1	0.70	0.77	0.73	0.81	0	0.63	0.70	0.66	0.74	0	0.62	0.73	0.70	0.77	0
Number of children in household	1.75	1.91	1.77	2.06	0	2.07	2.38	2.22	2.55	0	2.27	2.66	2.48	2.84	0	2.58	2.72	2.56	2.88	1
Number of years of education of head	4.21	4.24	3.94	4.53	1	3.87	4.24	3.97	4.52	0	3.56	4.02	3.74	4.30	0	3.22	3.48	3.26	3.70	0
Head attained at least secondary school	0.13	0.13	0.11	0.15	1	0.13	0.15	0.13	0.18	0	0.10	0.14	0.11	0.16	0	0.08	0.10	0.09	0.12	0
Head attained education at level P1-P4	0.25	0.30	0.28	0.33	0	0.19	0.23	0.20	0.25	0	0.19	0.20	0.18	0.23	1	0.24	0.27	0.25	0.29	0
Head attained education at O' level and higher	0.05	0.06	0.04	0.08	1	0.05	0.08	0.07	0.10	0	0.04	0.07	0.05	0.08	0	0.04	0.05	0.04	0.06	0
Nr. of spouses with education at level P5-P7	0.15	0.15	0.13	0.17	1	0.15	0.18	0.16	0.21	0	0.09	0.12	0.10	0.14	0	0.11	0.15	0.13	0.17	0
Prop. of spouses with education at level P5-P7	0.15	0.14	0.12	0.16	1	0.14	0.17	0.15	0.19	0	0.09	0.12	0.10	0.14	0	0.11	0.15	0.13	0.17	0
Number of members literate	1.74	1.85	1.74	1.96	1	1.55	1.78	1.65	1.91	0	1.40	1.58	1.44	1.73	0	1.65	1.93	1.81	2.05	0

Source: Authors computations.

Table 4 Zero stage comparison between census means and household survey means (continued).

Variable	Central rural					East rural					North rural					West rural				
	CM	SM	L95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A	CM	SM	L 95	U95	A
Head literate	0.61	0.67	0.65	0.70	0	0.51	0.57	0.55	0.60	0	0.50	0.56	0.52	0.60	0	0.51	0.59	0.56	0.62	0
Proportion of members literate	0.59	0.65	0.63	0.67	0	0.46	0.52	0.49	0.55	0	0.41	0.47	0.43	0.50	0	0.48	0.57	0.54	0.59	0
Household head without education	0.32	0.29	0.27	0.32	0	0.41	0.35	0.32	0.37	0	0.43	0.38	0.35	0.41	0	0.44	0.39	0.36	0.42	0
Number of years of education of spouse	1.77	2.03	1.83	2.24	0	1.66	2.16	1.95	2.37	0	0.98	1.28	1.13	1.42	0	1.28	1.71	1.54	1.88	0
Number of spouses with primary school	0.27	0.31	0.28	0.33	0	0.27	0.37	0.34	0.40	0	0.19	0.25	0.23	0.28	0	0.24	0.31	0.29	0.34	0
Nr. of spouses with education at level P1-P4	0.11	0.15	0.13	0.17	0	0.11	0.16	0.14	0.18	0	0.10	0.13	0.11	0.14	0	0.13	0.16	0.14	0.18	0
Proportion of spouses with primary school	0.25	0.29	0.26	0.31	0	0.24	0.32	0.29	0.34	0	0.18	0.24	0.21	0.26	0	0.23	0.31	0.28	0.33	0
Prop. of spouses with education at level P1-P4	0.11	0.14	0.12	0.16	0	0.10	0.14	0.13	0.16	0	0.10	0.12	0.10	0.14	0	0.13	0.16	0.14	0.18	0
Mean number of years of education of spouses	1.69	1.92	1.72	2.12	0	1.47	1.86	1.68	2.03	0	0.93	1.20	1.06	1.34	0	1.24	1.68	1.51	1.85	0
Number of children 7-13 not attending school	0.26	0.16	0.13	0.19	0	0.33	0.23	0.20	0.26	0	0.49	0.41	0.36	0.47	0	0.41	0.27	0.24	0.30	0
Nr. of children 7-18 never attended school	0.27	0.15	0.12	0.18	0	0.39	0.24	0.20	0.28	0	0.62	0.48	0.41	0.55	0	0.49	0.32	0.28	0.36	0

Source: Authors computations.

4. Poverty estimates at county level

This section presents the poverty estimates for rural Uganda in 1991. In particular, the poverty estimates include expenditure per capita, poverty incidence, poverty gap and poverty gap squared. All results are presented for the four regions in Uganda, districts, and counties. The results are used for the tables in Appendix C, and the graphs in the Appendices D and E of Okwi *et al.* (2005)².

² Okwi, P.O., Hoogeveen, J.G., Emwanu, T., Linderhof, V.G.M. & Begumana, J. (2005). *Welfare and Environment in Rural Uganda. Results from a Small-Area Estimation Approach*. PREM Report 2005-04. Institute for Environmental Studies, Vrije Universiteit, Amsterdam, 43 pp.

Table 5 Poverty estimates at district and county level for rural Central Uganda, 1991.

District Code	Name	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
				Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
11	Kalangala		14,079	26,453	2,198	0.251	0.052	0.062	0.017	0.023	0.007
		Bujumba	7,259	24,005	2,226	0.302	0.063	0.076	0.022	0.028	0.010
		Kyamuswa	6,820	29,058	2,580	0.196	0.047	0.047	0.014	0.017	0.006
17	Kiboga	Kiboga	131,445	15,859	756	0.621	0.031	0.222	0.019	0.104	0.012
23	Luwero		403,948	17,501	528	0.555	0.021	0.184	0.010	0.082	0.006
		Buruli	89,146	16,087	879	0.621	0.035	0.221	0.020	0.104	0.012
		Katikamu	118,615	19,149	719	0.487	0.028	0.150	0.012	0.064	0.006
		Nakaseke	90,233	18,442	828	0.512	0.033	0.160	0.015	0.069	0.008
		Wabusaana	105,954	16,046	457	0.610	0.021	0.211	0.012	0.096	0.007
24	Masaka		723,415	18,652	559	0.503	0.020	0.158	0.009	0.067	0.005
		Bukomansimbi	125,020	19,259	802	0.472	0.030	0.141	0.013	0.058	0.006
		Bukoto	321,797	18,468	540	0.509	0.020	0.160	0.009	0.069	0.005
		Kalungu	138,911	19,528	740	0.469	0.024	0.143	0.010	0.060	0.005
		Lwemiyaga	19,253	21,591	2,850	0.455	0.061	0.151	0.026	0.068	0.014
		Mawogola	118,434	17,004	634	0.569	0.026	0.187	0.013	0.082	0.007
30	Mpigi		761,066	19,672	723	0.488	0.027	0.159	0.014	0.070	0.008
		Busiro	235,515	20,846	781	0.440	0.028	0.136	0.013	0.058	0.007
		Butambala	69,842	17,839	825	0.534	0.034	0.175	0.018	0.078	0.010
		Gomba	114,161	15,337	710	0.645	0.031	0.234	0.021	0.111	0.013
		Kyaddondo	199,759	22,966	997	0.392	0.029	0.117	0.013	0.049	0.007
		Mawokota	141,789	17,475	757	0.556	0.031	0.189	0.018	0.086	0.011

Table 5 Poverty estimates at district and county level for rural Central Uganda, 1991 (continued).

District Code	Name	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
				Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
31	Mubende		445,077	16,176	889	0.630	0.033	0.232	0.022	0.111	0.014
		Busujju	62,208	13,247	859	0.741	0.039	0.293	0.031	0.146	0.021
		Buwekula	112,876	18,726	1,581	0.545	0.043	0.191	0.023	0.089	0.014
		Kassanda	140,937	16,356	976	0.626	0.034	0.230	0.023	0.110	0.014
		Mityana	129,056	15,162	837	0.655	0.038	0.240	0.025	0.114	0.016
32	Mukono		705,227	19,078	674	0.495	0.024	0.159	0.012	0.070	0.007
		Bbaale	82,046	20,531	1,266	0.434	0.042	0.132	0.017	0.056	0.008
		Buikwe	185,781	18,207	769	0.528	0.027	0.176	0.014	0.079	0.008
		Buvuma	18,175	22,089	1,848	0.367	0.061	0.102	0.024	0.040	0.012
		Mukono	165,696	20,587	763	0.444	0.026	0.136	0.011	0.057	0.006
		Nakifuma	124,990	16,906	589	0.578	0.024	0.199	0.015	0.091	0.009
		Ntenjeru	128,539	19,151	1,014	0.487	0.035	0.153	0.017	0.066	0.010
35	Rakai		361,501	16,313	563	0.609	0.022	0.215	0.013	0.100	0.008
		Kabula	46,076	13,749	621	0.721	0.028	0.280	0.020	0.138	0.014
		Kakuuto	64,926	16,092	800	0.624	0.030	0.230	0.018	0.110	0.012
		Kooki	129,173	16,251	597	0.608	0.025	0.210	0.014	0.096	0.008
		Kyotera	121,326	17,470	712	0.559	0.028	0.187	0.015	0.084	0.008
	Total Central		3,545,758	18,203	345	0.534	0.013	0.178	0.007	0.080	0.004

Table 6 Poverty estimates at district and county level for rural Eastern Uganda, 1991.

District Code	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
			Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
7	Iganga	885,398	23,365	8,400	0.584	0.022	0.206	0.012	0.096	0.008
	Bugweri	76,229	15,805	713	0.602	0.032	0.211	0.018	0.098	0.010
	Bukooli	224,410	18,326	1,581	0.582	0.025	0.207	0.013	0.097	0.008
	Bunya	206,781	46,181	34,352	0.517	0.027	0.179	0.014	0.082	0.008
	Busiki	119,489	14,666	585	0.649	0.026	0.238	0.016	0.113	0.010
	Kigulu	129,678	15,383	732	0.617	0.032	0.218	0.018	0.102	0.011
	Luuka	128,811	16,095	622	0.589	0.027	0.202	0.015	0.092	0.009
8	Jinja	203,021	65,273	54,955	0.395	0.034	0.124	0.014	0.054	0.007
	Butembe	82,936	125,034	133,230	0.374	0.038	0.121	0.016	0.053	0.009
	Kagoma	120,085	23,999	4,505	0.410	0.041	0.126	0.016	0.054	0.008
13	Kamuli	460,682	12,790	836	0.739	0.037	0.306	0.030	0.159	0.021
	Budiope	124,776	12,091	793	0.772	0.033	0.335	0.030	0.179	0.022
	Bugabula/Buzaya	145,296	13,416	890	0.713	0.040	0.286	0.030	0.146	0.020
	Bulamogi	98,989	12,323	860	0.757	0.038	0.320	0.031	0.169	0.022
	Bugabula/Buzaya	91,621	13,255	950	0.715	0.044	0.284	0.032	0.143	0.021
14	Kapchorwa	102,019	19,060	1,677	0.458	0.063	0.137	0.027	0.057	0.014
	Kongasis	22,935	20,405	2,077	0.428	0.066	0.128	0.028	0.053	0.015
	Kwen	35,901	18,690	1,713	0.463	0.069	0.138	0.029	0.057	0.015
	Tingey	43,183	18,652	1,708	0.470	0.066	0.142	0.029	0.059	0.015
21	Kumi	216,150	10,945	776	0.824	0.034	0.370	0.032	0.202	0.023
	Bukedea	72,563	11,106	889	0.824	0.037	0.371	0.035	0.203	0.026
	Kumi	86,449	10,708	805	0.831	0.036	0.375	0.034	0.205	0.025
	Ngora	57,138	11,100	831	0.814	0.036	0.362	0.033	0.196	0.024
26	Mbale	640,929	16,205	546	0.588	0.023	0.205	0.013	0.095	0.008
	Bubulo	176,144	15,464	481	0.610	0.023	0.210	0.013	0.096	0.008

Table 6 Poverty estimates at district and county level for rural Eastern Uganda, 1991 (continued).

District Code	Name	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
				Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
26	Mbale cont.	Budadiri	142,733	16,812	825	0.561	0.033	0.194	0.018	0.089	0.010
		Bulambuli	64,080	17,154	817	0.552	0.030	0.190	0.015	0.087	0.009
		Bungokho	179,705	16,563	783	0.585	0.027	0.207	0.015	0.097	0.009
		Manjiya	78,267	15,172	683	0.626	0.031	0.224	0.019	0.105	0.012
34	Pallisa		347,936	14,910	486	0.637	0.022	0.230	0.013	0.109	0.008
		Budaka	98,826	15,257	707	0.621	0.031	0.221	0.017	0.104	0.010
		Butebo	62,398	15,462	567	0.609	0.026	0.212	0.015	0.097	0.009
		Kibuku	89,849	14,171	543	0.670	0.025	0.251	0.016	0.122	0.011
		Pallisa	96,863	14,885	564	0.639	0.025	0.232	0.015	0.110	0.010
37	Soroti		358,452	11,741	743	0.787	0.033	0.341	0.028	0.182	0.020
		Amuria	44,620	12,845	1,695	0.744	0.071	0.315	0.048	0.166	0.032
		Kaberaido	36,629	11,494	780	0.797	0.035	0.347	0.030	0.186	0.021
		Kalaki	39,879	11,603	877	0.791	0.040	0.338	0.034	0.179	0.024
		Kapelebyong	16,805	10,492	840	0.835	0.036	0.391	0.038	0.220	0.030
		Kasilo	28,826	11,244	849	0.805	0.039	0.359	0.033	0.195	0.024
		Serere	54,197	12,038	804	0.772	0.037	0.326	0.029	0.172	0.020
		Soroti	69,230	11,386	728	0.805	0.033	0.354	0.029	0.190	0.021
		Usuk	68,266	11,874	742	0.779	0.033	0.335	0.028	0.178	0.019
38	Tororo		483,104	17,927	1,933	0.628	0.020	0.228	0.013	0.108	0.008
		Bunyole	103,163	25,966	8,043	0.559	0.026	0.198	0.014	0.092	0.008
		Kisoko	156,173	13,877	587	0.684	0.029	0.252	0.019	0.120	0.012
		Samia-Bugwe	133,252	17,918	2,402	0.625	0.022	0.230	0.014	0.110	0.009
		Tororo	90,516	15,765	734	0.616	0.029	0.220	0.017	0.103	0.010
Total East			3,697,691	19,630	4,074	0.635	0.015	0.240	0.009	0.118	0.006

Table 7 Poverty estimates at district and county level for rural Northern Uganda, 1991.

District Code	Name	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
				Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
1	Apac		440,829	15,662	791	0.643	0.029	0.236	0.016	0.113	0.010
		Kole	113,620	15,873	893	0.645	0.030	0.236	0.017	0.112	0.011
		Kwania	83,067	15,180	771	0.652	0.033	0.232	0.019	0.108	0.011
		Maruzi	70,583	15,198	842	0.658	0.034	0.242	0.020	0.116	0.012
		Oyam	173,559	15,943	964	0.632	0.033	0.236	0.017	0.115	0.010
2	Arua		600,141	16,778	862	0.640	0.029	0.232	0.018	0.110	0.011
		Aringa	98,081	13,867	835	0.729	0.036	0.281	0.027	0.138	0.017
		Ayivu	109,044	24,989	2,884	0.498	0.031	0.177	0.018	0.085	0.013
		Koboko	57,190	11,966	1,114	0.796	0.055	0.320	0.042	0.161	0.027
		Madi-Oklo	69,239	17,500	1,655	0.563	0.061	0.195	0.028	0.090	0.015
		Maracha	106,073	14,873	725	0.674	0.035	0.236	0.022	0.108	0.013
		Terego	97,542	15,119	770	0.659	0.038	0.230	0.022	0.106	0.013
		Vurra	62,972	16,453	800	0.604	0.035	0.208	0.020	0.096	0.012
5	Gulu		277,223	12,081	652	0.798	0.020	0.385	0.020	0.222	0.017
		Achiwa	62,851	12,773	749	0.769	0.024	0.365	0.022	0.208	0.017
		Kilak	84,215	10,208	505	0.855	0.017	0.436	0.021	0.260	0.018
		Nwoya	36,109	9,850	558	0.871	0.018	0.449	0.025	0.269	0.022
		Omoro	94,048	14,154	1,083	0.737	0.028	0.329	0.022	0.179	0.016
19	Kitgum		327,085	13,141	30,480	0.882	0.013	0.419	0.015	0.235	0.012
		Agago	93,307	21,550	106,446	0.876	0.015	0.415	0.017	0.233	0.014
		Aruu	79,406	9,597	341	0.890	0.013	0.430	0.017	0.243	0.014
		Chua	86,781	9,436	321	0.901	0.013	0.434	0.016	0.243	0.013
		Lamwo	67,591	10,452	406	0.857	0.016	0.394	0.018	0.216	0.014

Table 7 Poverty estimates at district and county level for rural Northern Uganda, 1991 (continued).

District Code	Name	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
				Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
20	Kotido		111,552	8,818	425	0.909	0.014	0.473	0.021	0.283	0.019
		Dodoth	45,539	8,517	466	0.919	0.015	0.487	0.024	0.294	0.021
		Jie	43,678	8,517	489	0.917	0.015	0.489	0.025	0.297	0.022
		Labwor	22,335	10,019	443	0.874	0.018	0.414	0.021	0.231	0.016
22	Lira		454,193	13,527	577	0.735	0.024	0.300	0.018	0.153	0.012
		Dokolo	83,818	12,401	524	0.780	0.025	0.310	0.019	0.153	0.013
		Erute	150,126	14,182	788	0.706	0.029	0.292	0.021	0.152	0.015
		Kyoga	66,631	17,863	1,639	0.573	0.050	0.198	0.024	0.090	0.013
		Moroto	111,112	11,777	582	0.801	0.025	0.341	0.021	0.180	0.016
		Otuke	42,506	11,210	468	0.828	0.021	0.357	0.019	0.187	0.014
28	Moroto		123,002	11,350	1,610	0.837	0.027	0.426	0.022	0.254	0.017
		Bokora	35,280	11,633	1,945	0.827	0.030	0.443	0.027	0.279	0.024
		Chekwii	30,998	11,391	1,822	0.835	0.036	0.418	0.028	0.245	0.021
		Matheniko	32,056	10,431	1,058	0.865	0.023	0.432	0.024	0.251	0.020
		Pian	17,393	12,609	2,450	0.811	0.038	0.402	0.032	0.234	0.025
		Upe	7,275	10,836	1,234	0.842	0.034	0.414	0.036	0.240	0.029
29	Moyo		132,801	13,994	664	0.702	0.027	0.282	0.018	0.144	0.012
		East Moyo	62,091	13,948	719	0.703	0.030	0.280	0.020	0.142	0.013
		Obongi	21,558	12,791	900	0.753	0.036	0.322	0.029	0.171	0.021
		West Moyo	49,152	14,581	806	0.678	0.033	0.266	0.022	0.134	0.014
33	Nebbi		286,352	10,019	327	0.879	0.013	0.407	0.016	0.223	0.013
		Jonam	62,868	10,754	495	0.850	0.021	0.378	0.021	0.201	0.016
		Okolo	117,348	9,570	339	0.895	0.013	0.428	0.017	0.239	0.014
	Total North		2,753,178	13,756	3,675	0.748	0.011	0.321	0.008	0.171	0.006

Table 8 Poverty estimates at district and county level for rural Western Uganda, 1991.

District Code	Name	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
				Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
3	Bundibugyo		86,290	16,036	1,100	0.578	0.039	0.231	0.025	0.122	0.017
		Bwamba	72,675	15,336	1,137	0.613	0.041	0.252	0.028	0.135	0.020
		Ntoroka	13,615	19,772	1,590	0.391	0.057	0.123	0.022	0.056	0.011
4	Bushenyi		410,296	18,689	754	0.446	0.030	0.147	0.013	0.069	0.007
		Buhweju	48,718	16,219	922	0.532	0.045	0.181	0.021	0.086	0.011
		Bunyaruguru	15,339	21,419	1,681	0.357	0.050	0.113	0.020	0.052	0.010
		Igara	124,776	19,075	946	0.430	0.034	0.141	0.014	0.066	0.008
		Ruhinda	106,000	16,850	776	0.510	0.036	0.173	0.017	0.082	0.009
		Sheema	115,463	20,639	991	0.380	0.031	0.121	0.012	0.055	0.006
6	Hoima		188,676	17,334	1,452	0.523	0.059	0.190	0.030	0.095	0.017
		Bugahya	115,625	17,274	1,457	0.532	0.058	0.197	0.031	0.099	0.018
		Buhaguzi	73,051	17,430	1,533	0.510	0.062	0.179	0.030	0.087	0.017
9	Kabale		372,035	15,746	858	0.559	0.041	0.197	0.020	0.096	0.012
		Ndorwa	140,584	15,826	990	0.556	0.047	0.197	0.023	0.096	0.013
		Rubanda	145,865	15,236	876	0.582	0.043	0.208	0.023	0.102	0.013
		Rukiga	85,586	16,485	1,007	0.525	0.045	0.181	0.021	0.087	0.011
10	Kabarole		558,615	16,887	704	0.513	0.030	0.178	0.014	0.086	0.008
		Bunyangabu	54,883	19,675	1,265	0.406	0.045	0.132	0.018	0.061	0.010
		Burahya	136,382	18,116	1,079	0.464	0.042	0.156	0.019	0.074	0.010
		Kibale	101,144	14,572	589	0.617	0.030	0.227	0.017	0.113	0.010
		Kitagwenda	53,191	15,526	754	0.577	0.036	0.208	0.019	0.103	0.011
		Kyaka	55,756	17,382	973	0.481	0.042	0.162	0.019	0.077	0.010
		Mwenge	157,259	16,624	889	0.516	0.039	0.177	0.018	0.085	0.010
15	Kasese		208,924	15,962	1,315	0.555	0.063	0.197	0.032	0.096	0.019
		Bukonjo	129,236	15,597	1,323	0.568	0.066	0.201	0.034	0.098	0.020

Table 8 Poverty estimates at district and county level for rural Western Uganda, 1991 (continued).

District Code	Name	County Name	Population	Expenditure per capita		Poverty incidence		Poverty gap		Poverty gap squared	
				Mean	S.e.	Mean	S.e.	Mean	S.e.	Mean	S.e.
15	Kasese cont.	Busongora	79,688	16,555	1,504	0.532	0.065	0.191	0.033	0.094	0.019
16	Kibale		206,913	13,311	614	0.686	0.031	0.267	0.021	0.137	0.014
		Bugangazi	46,086	13,618	865	0.676	0.042	0.264	0.027	0.136	0.018
		Buyaga	123,723	13,361	563	0.681	0.029	0.262	0.019	0.134	0.012
		Buyanja	37,104	12,761	840	0.714	0.043	0.286	0.031	0.149	0.021
18	Kisoro		174,013	12,930	749	0.703	0.041	0.273	0.027	0.140	0.017
		Bufumbira	174,013	12,930	749	0.703	0.041	0.273	0.027	0.140	0.017
25	Masindi		221,239	11,853	879	0.762	0.039	0.336	0.034	0.187	0.025
		Bujenje	41,336	12,533	1,049	0.728	0.051	0.301	0.036	0.160	0.024
		Buliisa	43,153	10,666	1,163	0.824	0.046	0.391	0.047	0.228	0.036
		Buruli	68,910	12,378	1,001	0.737	0.045	0.322	0.035	0.179	0.025
		Kibanda	67,840	11,659	883	0.769	0.040	0.336	0.036	0.187	0.027
27	Mbalala		486,531	19,430	750	0.425	0.025	0.139	0.011	0.065	0.006
		Bukanga	49,213	18,683	1,070	0.448	0.041	0.148	0.019	0.069	0.010
		Ibanda	117,569	18,154	801	0.462	0.032	0.153	0.014	0.072	0.007
		Isingiro	99,027	19,358	926	0.434	0.031	0.142	0.013	0.066	0.007
		Kashari	45,970	22,012	1,384	0.346	0.036	0.110	0.013	0.050	0.007
		Kazo	45,313	17,484	1,053	0.488	0.045	0.164	0.020	0.077	0.011
		Nyabushozi	50,564	19,513	1,205	0.405	0.045	0.129	0.018	0.059	0.009
		Bwampara	78,875	21,446	1,181	0.366	0.030	0.116	0.012	0.053	0.006
36	Rukungiri		341,422	13,854	594	0.654	0.032	0.241	0.018	0.120	0.011
		Kinkizi	142,853	13,858	702	0.652	0.038	0.239	0.021	0.118	0.012
		Rubabo	90,086	14,699	808	0.610	0.040	0.218	0.021	0.107	0.012
		Rujumbura	108,483	13,148	717	0.692	0.039	0.263	0.024	0.133	0.015
	Total West		3,254,954	16,211	314	0.554	0.014	0.202	0.008	0.100	0.005